

United States District Court, Northern District of Illinois

Name of Assigned Judge or Magistrate Judge	John A. Nordberg	Sitting Judge if Other than Assigned Judge	
CASE NUMBER	95 C 1617	DATE	1/24/2002
CASE TITLE	Shanklin Corporation vs. American Packaging, et al		

[In the following box (a) indicate the party filing the motion, e.g., plaintiff, defendant, 3rd party plaintiff, and (b) state briefly the nature of the motion being presented.]

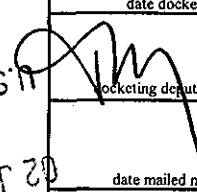
MOTION:

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DOCKET ENTRY:

- (1) ☐ Filed motion of [use listing in "Motion" box above.]
- (2) ☐ Brief in support of motion due ____.
- (3) ☐ Answer brief to motion due _____. Reply to answer brief due _____.
- (4) ☐ Ruling/Hearing on _____ set for _____ at _____.
- (5) ☐ Status hearing[held/continued to] [set for/re-set for] on _____ set for _____ at _____.
- (6) ☐ Pretrial conference[held/continued to] [set for/re-set for] on _____ set for _____ at _____.
- (7) ☐ Trial[set for/re-set for] on _____ at _____.
- (8) ☐ [Bench/Jury trial] [Hearing] held/continued to _____ at _____.
- (9) ☐ This case is dismissed [with/without] prejudice and without costs[by/agreement/pursuant to]
☐ FRCP4(m) ☐ General Rule 21 ☐ FRCP41(a)(1) ☐ FRCP41(a)(2).
- (10) ☒ [Other docket entry] Enter Memorandum Opinion and Order. For the foregoing reasons, this court grants plaintiff's motion for summary judgment and denies defendants' motion for summary judgment. The parties are to appear for a status hearing on February 13, 2002 at 2:30 p.m. to discuss the remaining issues in this case. (221-1,220-2,3)

- (11) ☒ [For further detail see order attached to the original minute order.]

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**IN THE UNITED STATES DISTRICT COURT
FOR THE NORTHERN DISTRICT OF ILLINOIS
EASTERN DIVISION**

SHANKLIN CORPORATION,

Plaintiff,

v.

AMERICAN PACKAGING
MACHINERY, INC. and RALLY
PACKAGING CORPORATION,

Defendants.

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No. 95 C 1617

Judge John A. Nordberg

DOCKETED
JAN 25 2002

MEMORANDUM OPINION AND ORDER

This is a patent infringement action. Before the court are renewed motions for summary judgment filed by plaintiff Shanklin Corporation (“Shanklin”) and by defendants American Packaging Machinery, Inc. (“APM”) and Rally Packaging Corporation (“Rally”).¹ Each side believes this case can be disposed of on summary judgment. Because this case hinges primarily upon a question of claim construction, it is well-suited for disposition on summary judgment.

BACKGROUND

Plaintiff is the owner of patent 5,097,939 dated March 24, 1992 and entitled “Synchronous Position Product Feed System.” The commercial embodiment of the ‘939 patent is known as the Shanklin Infeed. Plaintiff’s invention falls into the category of controlled

¹Both sides previously moved for summary judgment. We denied both motions without prejudice because the parties failed to comply with this court’s local rules regarding the presentation of material facts. L.R. 56.1.

product feed systems, which accept products in a random manner and guide them in a controlled way so that they are delivered in an evenly-spaced manner to a downstream machine, such as a shrink wrap machine, that must operate at a set speed to wrap products for further bulk packaging and sale. Defendant APM owns and sells a similar feed product machine – known as the APM Infeed or HSC-100 – that is not patented.

This lawsuit was triggered when Shanklin's president received a call in 1994 from a consultant (James Pogue) who had been hired by APM to work on the design of the APM Infeed. Pogue became suspicious when APM's president handed him a drawing of the Shanklin Infeed during the design process. Worried about possible infringement issues over the Shanklin patent, Pogue called Shanklin's president and explained that he was involved with the development of a machine that "closely resembled" the Shanklin machine. Plaintiff thereafter filed this patent infringement action.

Defendants eventually filed a counterclaim based on the following allegations. In February 1995, Rank Video, a manufacturer of packaged videotapes, contracted to buy seven APM Infeeds from defendant Rally for Rank Video's new plant near Little Rock, Arkansas. Rank Video also had entered into a contract to buy Shanklin shrink wrapping machines for this plant. Shanklin, apparently after learning about the possible infringement by the APM Infeed, advised Rank Video that it would not deliver its shrink wrapping machines if they were to be used with the APM Infeeds. As a result, Rank Video cancelled its contract with Rally. Defendants allege that Shanklin tortiously interfered with the contract between Rank Video and Rally and also with the related contract between Rally and APM.

Plaintiff believes that APM copied the Shanklin Infeed. This conclusion is based on the information provided by Pogue as well as on the “striking similarity” (according to plaintiff) between the APM Infeed and the Shanklin Infeed. Although plaintiff raises the allegation of copying, the parties agree that this allegation is not relevant to plaintiff’s current motion. Plaintiff is seeking summary judgment of infringement under claims 1 through 9 of the patent, thus excluding claims 10 and 11 for purposes of this motion. Defendants have moved for summary judgment on the issue of infringement and also for partial summary judgment (as to liability only) on their counterclaim.

Defendants concede that APM Infeed has the same basic elements and is configured in the same basic way as the Shanklin Infeed but argue that the APM Infeed operates in one fundamentally different respect. The second conveyor on the APM machine runs in a stop-start manner accelerating rapidly, decelerating, and stopping for each product that passes through the system whereas the second conveyor on the Shanklin Infeed runs at a relatively constant speed making only minor adjustments in speed to account for differences in length, if any, of each individual product. As discussed in greater detail below, this case is about whether this undisputed difference in operation of the second conveyor of each machine – jerky motion versus smooth motion – is enough to avoid literal infringement. This question in turn hinges upon whether there is a smoothness requirement contained in the sixth element of claim 1 and in the similar elements in the other claims.

Before discussing the disputed claim language, it will be helpful to describe how the Shanklin Infeed operates. The Shanklin Infeed, like the APM Infeed, is made up of a series of conveyor belts lined end to end. Specifically, there are four conveyor belts in a row, which we

will refer to as follows: (1) the first conveyor, (2) the second conveyor, (3) the transfer conveyor, and (4) the flighted conveyor. There is another conveyor, known as the squeeze conveyor, which is located above the second conveyor. The overall goal of the system is to control the speed and spacing of the products so that they are fed into the downstream machine at the correct speed to allow that machine to operate efficiently and quickly.

The first conveyor accepts products that arrive in a random manner and moves them along at a constant, preselected speed to the second conveyor. The second conveyor and the squeeze conveyor (together, the “control conveyor”) squeeze the incoming products, slowing them down to a speed slower than the first conveyor.² Thus, similar to the effect of a toll booth on a highway, the control conveyor causes the products to bunch up together bumper to bumper or, as described in the patent, “in a contiguously abutted condition.” The second conveyor then releases each product at the appropriate time to the transfer conveyor, which is the third conveyor in the sequence.

The transfer conveyor operates at a constant speed that is higher than that of the second conveyor. As a result, the transfer conveyor “pulls a gap” between each product as it emerges from the control conveyor that is, again, analogous to the way a car accelerates from a toll booth creating a space between it and the car behind it. The products are then transferred to the fourth conveyor, known as the flighted conveyor. The flighted conveyor contains evenly spaced vertical slats or lugs that are referred to as flights.³ These flights, which are perpendicular to the

²The second conveyor has a low-friction surface that allows the products to slip.

³According to the defendants, the word “flight” may have come from the fact that the lugs seem to be “flying” when the machine operates at high speed.

horizontal conveyor belt, create a space or compartment for each product (or, if necessary, each group of products). The distance between each flight is the distance needed to allow the downstream machine to efficiently process the product.

It is essential that each product be delivered to the flighted conveyor at the right time so that it will land in between the two vertical flights and not on top of them. This requires that the entire machine be internally synchronized. As noted above, the flighted conveyor operates at a constant speed. The second conveyor is the key part of the operation because its speed can be adjusted as needed to move each product along at the right speed so that it will reach the flighted conveyor at the right time. The second conveyor therefore must be synchronized with the flighted conveyor. Because the second conveyor takes its cue from the flighted conveyor, the second conveyor is sometimes referred to as the “slave” and the flighted conveyor as the “master.” Any adjustment made to the speed of an individual product – *i.e.*, speeding it up or slowing it down – is made before it leaves the second conveyor.

A servo motor is hooked up to the second conveyor by means of a belt and pulleys and thereby can adjust the speed of that conveyor as needed. The servo motor is controlled by the servo controller, which contains a computer program. The servo controller receives information from two electronic sensors, or “eyes.” One sensor is attached to the flighted conveyor and measures the speed of the flighted conveyor. The other sensor is attached to the end of the second conveyor and measures leading and trailing edges of each product as it moves from the second conveyor to the transfer conveyor. Based on the information received from these two sensors, the computer program in the servo controller tells the servo motor to adjust the speed of the speed of the second conveyor as needed.

It is important to place the Shanklin patent in its historical context. As acknowledged in the patent background section, there were a number of other product feed systems in operation at the time of the Shanklin patent, and “[f]eeding product between the flights of the flighted infeed conveyor has always been a problem.” (Col. 2, ll. 3-4.) During the patent application process, plaintiff specifically sought to distinguish its invention from the Nordstrom patent, No. 4,360,098. The Nordstrom patent also disclosed a infeed conveyor system that utilized a squeeze conveyor operating at a variable speed. In fact, plaintiff spent several years in the patent application process, and the patent examiner rejected the application several times because plaintiff failed to distinguish its invention over the Nordstrom patent. Eventually, plaintiff distinguished its machine in way that convinced the examiner to approve the patent.

A key part of this effort was the addition of the sixth element in claim 1. Set forth below is claim 1 in its entirety with the sixth element highlighted in bold:

1. An in-line product feed system comprising:

a first in-line conveyor for transporting a sequence of discrete products at a first linear speed but adapted to allow product to slip if forward advance of product is resisted;

a second in-line conveyor for receiving product discharged from said first conveyor and running at a speed slower than said first conveyor;

product retarding means located at said second conveyor arranged to control product thereon to advance at the running speed of said second conveyor thereby accumulating products from said first conveyor in a contiguously abutted condition;

product removal means for removing said product discharged from said second conveyor at a speed higher than the speed of said second conveyor thereby creating a space between succeeding products;

product receiving means with designated spaces for individually receiving and removing spaced products from said product removal means;

means to adjust the speed of said second conveyor whereby the speed of said second conveyor is equal to the speed of said product receiving means multiplied by the length of said product or a grouping of said product being fed and divided by the length of a designated space in said product receiving means;

means for generating a first signal timed in relation to the designated spaces of said product receiving means; and

control means including, means for sensing the discharge of individual product near the discharge end of said second conveyor to produce a second control signal;

means for comparing the first and second signals to determine which of said products require positional corrections; and

means for incrementally advancing or retarding time of discharge of said products from said second conveyor in response to signals from said comparing means to deliver products in fixed relation to the individual receiving positions of said product receiving means.

(Col.15, ll.1-44.)

Several of these elements correspond to the structural elements of the invention. The first element refers to the first conveyor and the second element refers to the second conveyor and so on. The sixth element, in contrast, is written in means-plus-function format and does not refer to a particular structure. *See generally Lockheed Martin Corp. v. Space Systems/Loral, Inc.*, 249 F.3d 1314, 1323-24 (Fed. Cir. 2001) (“A means-plus-function limitation recites a function to be performed rather than definite structure or materials for performing that function.”). The sixth element contains two parts – a “means” clause and a “whereby” clause. The “means” clause is “the means to adjust the speed of [the] second conveyor.” In the Shanklin Infeed, the “means” is the servo controller (with its computer program), the servo motor, and the servo amplifier.

The “whereby” clause contains the language in dispute. It sets forth a type of mathematical formula or equation that emerges from the operation of the machine. This equation links the speed of the second conveyor to the speed of the flighted conveyor in a mathematical relationship or formula. The equation specifically states that the speed of the second conveyor must be equal to the speed of the flighted conveyor multiplied by a certain fraction. This fraction is the length of the individual product divided by the length of the flight space.⁴

One of the primary goals of the Shanklin invention was to ensure that the products were fed accurately between the flights. Another goal of the patent was to accommodate products of varying length. The Shanklin Infeed makes an adjustment in the speed of the second conveyor to account for different product lengths. A difference in product length throws off the timing of the machine.⁵ The Shanklin Infeed is able to adjust the speed of the second conveyor for *each* product as it passes through. As a result, each product is delivered *precisely* between the flights.

This ability distinguishes the Shanklin invention from the Nordstrom invention, which does not adjust the speed of the second conveyor for every product but instead makes an adjustment only after a certain amount of products (say, five or ten) go through the system. The patent specification describes the operation of the Nordstrom machine as follows:

When product falls behind a synchronous speed, the squeeze conveyor [of the Nordstrom machine] is driven at a speed higher than synchronous which causes the product to catch up and it continues to do so until a sensing mechanism

⁴The claim language uses more formal terminology, describing the flighted conveyor as the “product receiving means” and the length of the flight space as “the length of a designated space in said product receiving means.”

⁵If a product is longer, the second conveyor must run at a faster speed to get that product to the flighted conveyor at the right time. Conversely, if a product is shorter, then the second conveyor must run at a slower speed.

determines that the product is too far advanced and the conveyor then resumes a speed which is slower than synchronous. The difficulty with this particular arrangement is that products are always moving in and out of correct location in the machine, and the product is never being fed at synchronous speed. A further problem is that when a product is sensed to be out of correct location, it is too late to bring it back into correct location. Succeeding products can be gradually brought back into correct location, but the position of the product that was sensed to be out of correct location cannot be corrected. The control conveyor of the apparatus of the present invention, on the other hand, always feeds products at synchronous speed, except for fractional second increases or decreases to bring product back into correct location. In addition, the present invention can correct the position of each product passing through it so that every product is delivered in correct location for subsequent processing.

(Col. 3., ll. 17-39.) Thus, the conveyor belt on the Nordstrom machine alternates between two speeds – a little too slow and a little too fast – and does not adjust its speed for each individual product.

It is undisputed that the APM Infeed is similar to the Shanklin Infeed in that it delivers each product precisely within the flight spaces in a way that improves upon the Nordstrom patent. It is also undisputed that the APM Infeed contains all of the same physical elements as the Shanklin Infeed. In particular, it contains a servo controller (known as the Acro-Loop), a servo motor, and an amplifier. The only difference is that the controller of the APM Infeed is programmed to run the second conveyor in a “stop-start” manner – that is, for each individual product, the second conveyor rapidly accelerates and then rapidly decelerates after ejecting the product onto the transport conveyor and then stops. This operation results in a “jerky” movement that everyone agrees can be observed by simply watching the machine operate. In contrast, the second conveyor of the Shanklin Infeed operates at a relatively constant speed with only slight adjustments in speed. The parties agree that, if the programming instructions in the two machines were switched, they would each operate exactly as the other.

DISCUSSION

Plaintiff is proceeding under a theory of literal infringement and is not making an argument under the doctrine of equivalents. The first step in a patent infringement analysis is to construe the claims, and the second step is to compare the construed claims to the allegedly infringing device. *J&M Corp. v. Harley-Davidson, Inc.*, 269 F.3d 1360, 1366 (Fed. Cir. 2001). The first step, claim construction, is a legal issue that is decided by the court, and the second step is a factual question. *Id.* However, “[o]n occasion the issue of literal infringement may be resolved with the step of claim construction, for upon correct claim construction it may be apparent whether the accused device is within the claims.” *Multiform Desiccants, Inc. v. Medzam*, 133 F.3d 1473, 1476 (Fed. Cir. 1998). “The basic tools of claim construction are the words of the claim, understood in light of the specification and the prosecution history, in accordance with the usage and knowledge in the field of the invention.” *Talbert Fuel Systems Patents Co. v. Unocal Corp.*, ___ F.3d ___, 2002 WL 21739, *2 (Fed. Cir. Jan. 8, 2002).

Defendants argue that the distinguishing feature of all 11 claims of the patent is “synchronous operation,” a concept discussed in greater detail below. Defendants further argue that this synchronicity feature is expressed specifically in the sixth element of claim 1 (as well as in other comparable elements in the other claims). Defendants do not specifically challenge any of the other elements. Therefore, the parties have narrowed this case to the meaning and application of the sixth element. Other than citing to cases for general propositions of law, the parties did not cite to any case law that was probative.

The starting point for the analysis is the basic fact that the second conveyor on the Shanklin Infeed operates in a relatively smooth manner and at a relatively constant speed whereas

the APM Infeed operates in a jerky manner with rapid accelerations and decelerations. Plaintiff recognizes this difference in operation but asserts that it is irrelevant for purposes of literal infringement because the patent claims contain no requirement that the second conveyor operate at a constant speed or in a smooth motion. Defendants argue that the mathematical equation contained in the sixth element imposes such a requirement. Plaintiff believes that defendants are attempting to import a limitation into the sixth element that is not supported by the literal words of the claim. The logical upshot of the parties' respective arguments is that, if we find that there is a requirement of constant speed or smooth motion contained in the sixth element, then there is no literal infringement because the second conveyor on the APM Infeed indisputably does not operate in a smooth manner. On the other hand, if we find that there is no such requirement, then there is literal infringement under claim 1 as a matter of law.

In arguing for a smoothness requirement, defendants make a roundabout argument. Rather than focusing on the specific words of the claim, they begin with the general assertion that the sixth element is expressing the larger notion of synchronous operation. Although the sixth element never uses the word synchronicity, defendants believe that the sixth element nonetheless is – as they put it in their brief – “talking synchronicity.” Defendants then argue – and, as we shall see, this is an important step -- that this concept of synchronicity necessarily means that the second conveyor must operate at a constant or smooth speed.

Plaintiff agrees that synchronicity is a key aspect of its invention but argues that the defendants have misinterpreted this concept to mean constant speed. All that is meant by synchronous operation, according to plaintiff, is that the second conveyor must deliver each product so that it falls within the flights of the flighted conveyor. Plaintiffs refer to this as the

“one product per one flight” principle. Under this interpretation, the second conveyor need not operate at a *constant* speed in order to be synchronous. All that is required is that it operate at a certain *average* speed over the cycle of delivering one product. If only average speed is required, then there are a number of different ways to achieve the same average speed, including a relatively constant speed (such as the Shanklin Infeed) or a varying speed (such as the APM Infeed). The gist of plaintiff’s argument is that, like the fable of the tortoise and the hare, the important thing is when each product gets to the finish line and not how fast it was moving at any particular moment on its way there.

Plaintiff explained this point in terms of the well-known formula that distance equals speed multiplied by time. This relationship can be plotted on a graph with speed on the vertical axis and time on the horizontal axis. In calculus terms, the distance traveled over a certain amount of time would be the amount of area under the curve of the line that is drawn across the graph. According to plaintiff, there are an infinite number of ways to achieve the same “area under the curve” and it does not matter *how* you do it. For example, as plaintiff’s expert testified in his deposition, the second conveyor could run at the same speed as the flighted conveyor for half the cycle and then at zero speed for the other half of the cycle resulting in an overall average speed of one-half the speed of the flighted conveyor. Or it could simply run at a constant speed of one-half throughout the entire cycle.

It is undisputed that the second conveyor of the APM conveyor operates at the same average speed over the cycle of one product delivery as the Shanklin conveyor despite the fact that the APM conveyor does not operate at a constant speed at every moment during the cycle. In sum, if plaintiff’s interpretation is accepted, it is clear that the APM Infeed meets the operational

limitation of the sixth element.

After reviewing the specific language of the sixth element, the broader language of the patent specification, and the prosecution history, we conclude that plaintiff's interpretation of the sixth element is the most convincing one and find that there is no implied requirement of constant speed as suggested by defendants.

We will first look at the specific language of the sixth element. Rather than focusing on the more general concept of synchronicity, this inquiry focuses on the specific words and structure of the sixth element. This is a logical starting point because, in construing claims, we may only interpret the words that are actually included in the claim. *See generally Renishaw PLC v. Marposs Societa' Per Azioni*, 158 F.3d 1243, 1248 (Fed. Cir. 1998) ("it is manifest that a claim must explicitly recite a term in need of definition before a definition may enter the claim from the written description. [C]laim construction inquiry [] begins and ends in all cases with the actual words of the claim.").

Defendants are arguing that the equation imposes a requirement of "constant speed" on the second conveyor whereas plaintiff maintains that it merely requires "average speed" over the cycle of one product delivery. The equation merely uses the word "speed," thus providing no obvious indication as to whether speed should be interpreted as average or instantaneous. To answer this question, we must look in greater detail at how the equation works, which is something that defendants never really do in their argument.

Like all equations, this one consists of two parts on either side of an equal sign. One side is the speed of the second conveyor. The other side is the speed of the flighted conveyor multiplied by a fraction consisting of the length of the individual product divided by the length of

the flight space. By definition, the two sides of an equation must always be equal in order for the equation to remain true or be in balance. Another way of stating this point is to say that the equation must be “constant.” It is important to realize, however, that the mere fact that the equation itself must be constant (or true) does not necessarily mean that the speed of the second conveyor must also be constant. For example, if the product length increases, then the numerator of the fraction increases, thereby causing the speed of the second conveyor to increase. In this instance, the speed of the second conveyor changes slightly but the overall equation remains constant.⁶

This is a critical distinction that defendants gloss over in their argument. At several points in their brief, defendants assert that the sixth element describes variously a “constant fractional speed relationship,” a “constant ratio,” and a “fixed fraction.” In our opinion, these phrases simply express the non-controversial point made above, which is that it is reasonable to expect that the equation itself must remain constant. At other points, defendants move from this more general point about the constancy of the equation to the more specific point that the second conveyor must operate at a constant speed. These are different points and defendants never really provide any explanation for why this leap is justified. If the equation simply consisted of the speed of the second conveyor on the one side and the speed of the flighted conveyor on the other side, then it would be accurate to say that the speed of the second conveyor must always be

⁶It is thus not strictly accurate to even say that the second conveyor on the Shanklin Infeed operates at a perfectly constant speed given that it makes adjustments for changes in product length. However, the parties seem to agree that the Shanklin conveyor does operate at a near-constant speed given that these adjustments are relatively small especially in comparison to the more dramatic and abrupt changes of the APM conveyor. In this sense, the term “smoothness” is perhaps more accurate than “constant speed” because it could refer to both constant and near-constant speed.

constant given that the flighted conveyor is always constant. This statement, however, ignores the presence of the fraction in the formula.

Defendants have not attempted to explain specifically how the equation leads to a requirement of smoothness. One way to look at this question is to ask -- as plaintiff's expert did in his deposition -- whether the APM Infeed "obeys the equation." How do you know whether a machine obeys the equation? You have to apply the equation in practice. Specifically here, we can ask whether the stop-start operation of the APM machine (at any point in time) violates the equation of the sixth element. This question is really one that falls into the second step of the patent infringement analysis, which requires that we compare the construed claims to the accused device. However, by looking ahead to this question, we can help untangle the meaning of the sixth element.

In order to determine whether the equation is true at any particular point in time, you have to know and then fill in all of the variables of the equation. One of these variables is the length of the individual product. This means that the equation itself cannot be calculated mid-product and that the length of the product is the smallest interval for which the equation can be calculated. Stated differently, until the conveyor has progressed at least the length of one product, it is impossible to know whether the conveyor is complying with a formula that itself is dependent upon knowing the length of that product. Therefore, the speed of the second conveyor can be calculated only over the cycle of one product. The basic structure of the equation thus suggests that defendants' interpretation cannot be correct.

This conclusion is reinforced by looking at the patent specification, which discusses the history and purpose of the patent as well as how the preferred embodiment works. The

specification specifically discusses the equation as well as the overall concept of synchronous operation. With regard to the sixth element, the specification makes clear that it addresses the problem of accurately delivering products between the flights. The prefatory clause in the following excerpt demonstrates this point:

In order to deliver one product A per space 50 of the flighted conveyor, control conveyor 20 must run at a speed that is equal to the speed of the flighted conveyor 40, multiplied by the length of a product A, and divided by the length of a designated space in the product receiving means as indicated at 50.

(Col. 10, ll. 38-43; emphasis added.) This same point is made at several other places in the specification. *See, e.g.,* Col. 13, ll. 64-68 to Col. 14, l. 1 (“In operation, the control conveyor 20 is driven at the precise speed to feed one product for every flight of the flighted conveyor 40. *Thus*, servo motor 91 will drive the control conveyor at a speed equal to the speed of flighted conveyor multiplied by the length of a product A and divided by the length of a space 50.”) (emphasis added). These passages vindicate plaintiff’s “one product per one flight” interpretation.

As noted above, defendants rest much of their argument on their broader claim that synchronization is the central clue for understanding the sixth element. We agree, but find that this concept actually supports plaintiff’s interpretation. The specification repeatedly uses the concept of synchronization to convey the notion of accurately placing the product between the flights and not to refer to any notion of constant or smooth speed. *See, e.g.,* Col. 14, ll. 18-20 (“proper synchronization for deposit in a space 50 between conveyor flights”); Col. 14, ll. 32-33 (“the product will release at the proper time to synchronize into a space between the flights”); Col. 14, ll. 44-46 (“every product delivered to flighted conveyor 40 will be synchronized into the

correct position in spaces 50 of the flighted conveyor”); Col. 16, ll. 8-9 (“synchronize the timing of release of individual products such that said products arrive for said subsequent processing in a fixed relation as required for said predetermined placement”). The patent also refers to “synchronizing the release” of products from the control conveyor. (Col. 10, l. 51.) The reference to release, rather than speed, is further evidence that the specification is using synchronization to refer to the correct placement of the products. In sum, operating synchronously and operating smoothly are not the same thing.

The specification does contain a couple of statements that ostensibly lend support to defendants’ interpretation. The strongest of these is the following passage:

The preferred embodiment and best mode for practicing the present invention are disclosed as an in-line product feed system for delivering a series of discrete, individual products precisely located into a processing machine usually between the flights of a flighted infeed conveyor. The product flow is smooth, involves no dead stops while feeding individual packages and, hence, is not subject to undue acceleration or deceleration which could cause product damage and undue wear upon the components of the system.

(Col. 3, ll. 42-51.)

This passage suggests that one of the broader goals of the patent was to eliminate abrupt movement. Plaintiff also concedes in its brief that one of the advantages of the Shanklin Infeed “is that it may be run, if desired, in a steady manner to lessen the severity of abrupt starts and stops.” Plaintiff maintains, however, that this advantage is not something that is required by the sixth element or any other element. We agree.

These references in the specification to “undue acceleration” and “violent starts and stops” (col. 2, ll. 54-55) appear to be directed at certain older feed product systems, such the “hopper system” and the “angle feed” system, which utilized a completely different structure than

the two machines at issue here. When the specification specifically discusses the equation contained in the sixth element, there is no mention about any concern over undue acceleration. Instead, as set forth above, the specification emphasizes the importance of delivering each product accurately between the flights.

The prosecution history supports plaintiff's interpretation as well. The sixth element was specifically added to distinguish the Shanklin invention from the similar Nordstrom invention. As explained by plaintiff, and undisputed by defendants, Nordstrom delivers products between moving flight bars, but never at a speed exactly synchronized with that of the flight bars. Instead, delivery is always either a little too fast or a little too slow in relation to the speed of the flight bars. After delivery of successive groups of products is too fast for a period of time, the squeeze conveyor is slowed, and successive groups of product are then delivered too slowly for a period of time until the machine senses that the delivery of products is too far behind. The conveyor is then again accelerated to deliver product too fast.

There is nothing in this prosecution history that suggests in any way that the Nordstrom machine had a problem with undue acceleration or abrupt movement. In fact, the Nordstrom machine appears to operate at a relatively constant speed, simply alternating every so often between two basic speeds. In light of this prosecution history, it would be surprising if plaintiff sought to distinguish its machine over the Nordstrom machine by adding an element that imposed a requirement of smooth or constant speed.

Based on all the above factors, we find that the sixth element contains no requirement of smoothness or constant motion as argued by defendants.⁷ This finding thus means that the sixth element has been literally infringed by the APM Infeed. Because defendants have only contested the sixth element of claim 1, we therefore find that the APM Infeed literally infringes upon that claim. In addition, because the defendants rest their defense to claims 2 through 9 on the same ground, we find that the APM Infeed also literally infringes upon those claims.

In sum, plaintiff's motion for summary judgment is granted, and defendants' summary judgment motion is denied. It would appear that our finding of infringement would also doom the defendants' counterclaim for tortious interference with contract, as it is based on the allegation that plaintiff was unjustified in interfering with the Rank Video/Rally contract. However, because neither side specifically discussed how a finding of infringement would effect the counterclaim, we will deny the defendants' motion for partial summary judgment on the counterclaim without prejudice at this time and will not further analyze plaintiff's other defenses to that claim. The parties are directed to appear at a status hearing (at the time indicated below)


⁷In their supplemental briefs, the parties for the first time focused on fact that the sixth element is written in means-plus-function format. In a means-plus-function limitation, "the relevant structure in the accused device [must] perform the identical function recited in the claim and be identical or equivalent to the corresponding structure in the specification." *Lockheed Martin Corp. v. Space Systems/Loral, Inc.*, 249 F.3d 1314, 1325 (Fed. Cir. 2001). Defendants argue that the "means" referred to in the sixth element is the computer program in each controller and that the two machines therefore do not employ the same means. Plaintiff argues that the means is not the computer program but is simply the servo controller, servo motor, and amplifier, which are the same in both machines. We need not decide between these two arguments because, even if the computer program is the "means," defendants' argument is still unavailing. As we have concluded in this opinion, the APM Infeed performs the identical "function" as that recited in the sixth element. Unlike the function, which must be identical, the means need only be equivalent. Given that the two computer programs perform the same function, we find that the difference between them is "insubstantial" and that they therefore are equivalent. *See WMS Gaming Inc. v. Int'l Game Tech.*, 184 F.3d 1339, 1351 (Fed. Cir. 1999).

to discuss the remaining issues in this case, including how to proceed with damages portion of this case, whether plaintiff still intends to proceed with regard to claims 10 and 11, and the effect this ruling has on the viability of defendants' counterclaim.

CONCLUSION

For the foregoing reasons, this court grants plaintiff's motion for summary judgment and denies defendants' motion for summary judgment. The parties are directed to appear at a status hearing at 3:15 p.m. on February 13, 2002, to discuss the remaining issues in this case.

ENTER:


JOHN A. NORDBERG
Senior United States District Court Judge

DATED: January 24, 2002